TELECOMMUNICATION STANDARDIZATION SECTOR

Q.931 (05/98)

SERIES Q: SWITCHING AND SIGNALLING

Digital subscriber Signalling System No. 1 – Network layer

ISDN user-network interface layer 3 specification for basic call control

ITU-T Recommendation Q.931

(Previously CCITT Recommendation)



ITU-T Q-SERIES RECOMMENDATIONS

SWITCHING AND SIGNALLING

SIGNALLING IN THE INTERNATIONAL MANUAL SERVICE INTERNATIONAL AUTOMATIC AND SEMI-AUTOMATIC WORKING FUNCTIONS AND INFORMATION FLOWS FOR SERVICES IN THE ISDN CLAUSES APPLICABLE TO ITU-T STANDARD SYSTEMS Q.100-Q.119 SPECIFICATIONS OF SIGNALLING SYSTEMS No. 4 AND No. 5 SPECIFICATIONS OF SIGNALLING SYSTEM No. 6 SPECIFICATIONS OF SIGNALLING SYSTEM R1 SPECIFICATIONS OF SIGNALLING SYSTEM R2 DIGITAL EXCHANGES INTERWORKING OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEM No. 7 DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 Q.850-Q.999 General Data link layer Q.920-Q.929 Network layer Q.930-Q.939 User-network management Q.940-Q.949 Stage 3 description for supplementary services using DSS 1 Q.950-Q.999 PUBLIC LAND MOBILE NETWORK		
INTERNATIONAL AUTOMATIC AND SEMI-AUTOMATIC WORKING FUNCTIONS AND INFORMATION FLOWS FOR SERVICES IN THE ISDN Q.60–Q.99 CLAUSES APPLICABLE TO ITU-T STANDARD SYSTEMS Q.1100–Q.119 SPECIFICATIONS OF SIGNALLING SYSTEMS No. 4 AND No. 5 Q.250–Q.309 SPECIFICATIONS OF SIGNALLING SYSTEM No. 6 Q.250–Q.309 SPECIFICATIONS OF SIGNALLING SYSTEM R1 Q.310–Q.399 SPECIFICATIONS OF SIGNALLING SYSTEM R2 Q.400–Q.499 DIGITAL EXCHANGES INTERWORKING OF SIGNALLING SYSTEMS Q.600–Q.699 SPECIFICATIONS OF SIGNALLING SYSTEM No. 7 Q.700–Q.849 DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 Q.850–Q.999 General Q.850–Q.919 Data link layer Q.920–Q.929 Network layer Q.930–Q.939 User-network management Q.940–Q.949 Stage 3 description for supplementary services using DSS 1		
FUNCTIONS AND INFORMATION FLOWS FOR SERVICES IN THE ISDN CLAUSES APPLICABLE TO ITU-T STANDARD SYSTEMS Q.100-Q.119 SPECIFICATIONS OF SIGNALLING SYSTEMS No. 4 AND No. 5 Q.250-Q.309 SPECIFICATIONS OF SIGNALLING SYSTEM No. 6 Q.250-Q.309 SPECIFICATIONS OF SIGNALLING SYSTEM R1 Q.310-Q.399 SPECIFICATIONS OF SIGNALLING SYSTEM R2 Q.400-Q.499 DIGITAL EXCHANGES INTERWORKING OF SIGNALLING SYSTEMS Q.600-Q.699 SPECIFICATIONS OF SIGNALLING SYSTEMS Q.600-Q.699 SPECIFICATIONS OF SIGNALLING SYSTEM No. 7 Q.700-Q.849 DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 Q.850-Q.999 General Q.850-Q.999 Data link layer Q.920-Q.929 Network layer Q.930-Q.939 User-network management Q.940-Q.949 Stage 3 description for supplementary services using DSS 1	SIGNALLING IN THE INTERNATIONAL MANUAL SERVICE	Q.1–Q.3
CLAUSES APPLICABLE TO ITU-T STANDARD SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEMS No. 4 AND No. 5 Q.120-Q.249 SPECIFICATIONS OF SIGNALLING SYSTEM No. 6 SPECIFICATIONS OF SIGNALLING SYSTEM R1 SPECIFICATIONS OF SIGNALLING SYSTEM R2 DIGITAL EXCHANGES INTERWORKING OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEM No. 7 DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 Q.850-Q.999 General Data link layer Q.920-Q.929 Network layer User-network management Stage 3 description for supplementary services using DSS 1 Q.100-Q.119 Q.250-Q.219 Q.400-Q.499 Q.500-Q.999	INTERNATIONAL AUTOMATIC AND SEMI-AUTOMATIC WORKING	Q.4-Q.59
SPECIFICATIONS OF SIGNALLING SYSTEMS No. 4 AND No. 5 SPECIFICATIONS OF SIGNALLING SYSTEM No. 6 SPECIFICATIONS OF SIGNALLING SYSTEM R1 SPECIFICATIONS OF SIGNALLING SYSTEM R1 SPECIFICATIONS OF SIGNALLING SYSTEM R2 DIGITAL EXCHANGES INTERWORKING OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEM No. 7 DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 General Data link layer Network layer User-network management Stage 3 description for supplementary services using DSS 1 Q.120-Q.249 Q.250-Q.249 Q.310-Q.399	FUNCTIONS AND INFORMATION FLOWS FOR SERVICES IN THE ISDN	Q.60-Q.99
SPECIFICATIONS OF SIGNALLING SYSTEM No. 6 SPECIFICATIONS OF SIGNALLING SYSTEM R1 SPECIFICATIONS OF SIGNALLING SYSTEM R1 SPECIFICATIONS OF SIGNALLING SYSTEM R2 DIGITAL EXCHANGES INTERWORKING OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEM No. 7 DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 General Data link layer Data link layer Network layer User-network management Stage 3 description for supplementary services using DSS 1 Q.250-Q.309 Q.400-Q.499 Q.500-Q.599 Q.600-Q.699 Q.700-Q.849 Q.700-Q.849 Q.850-Q.999 O.920-Q.929 Network layer Q.930-Q.939	CLAUSES APPLICABLE TO ITU-T STANDARD SYSTEMS	Q.100-Q.119
SPECIFICATIONS OF SIGNALLING SYSTEM R1 SPECIFICATIONS OF SIGNALLING SYSTEM R2 DIGITAL EXCHANGES INTERWORKING OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEM No. 7 DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 General Data link layer Network layer User-network management Stage 3 description for supplementary services using DSS 1 Q.310–Q.399 Q.400–Q.499 Q.500–Q.499 Q.600–Q.699 Q.700–Q.849 Q.700–Q.849 Q.850–Q.999 Q.920–Q.929 Network layer Q.930–Q.939 Q.940–Q.949 Stage 3 description for supplementary services using DSS 1	SPECIFICATIONS OF SIGNALLING SYSTEMS No. 4 AND No. 5	Q.120-Q.249
SPECIFICATIONS OF SIGNALLING SYSTEM R2 DIGITAL EXCHANGES INTERWORKING OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEM No. 7 DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 General Data link layer Network layer User-network management Stage 3 description for supplementary services using DSS 1 Q.400-Q.499 Q.600-Q.699 Q.700-Q.849 Q.700-Q.849 Q.850-Q.999 Q.920-Q.929 Q.930-Q.929	SPECIFICATIONS OF SIGNALLING SYSTEM No. 6	Q.250-Q.309
DIGITAL EXCHANGES INTERWORKING OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEM No. 7 DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 General Data link layer Network layer User-network management Stage 3 description for supplementary services using DSS 1 Q.500-Q.599 Q.600-Q.699 Q.700-Q.849 Q.700-Q.849 Q.850-Q.999	SPECIFICATIONS OF SIGNALLING SYSTEM R1	Q.310-Q.399
INTERWORKING OF SIGNALLING SYSTEMS SPECIFICATIONS OF SIGNALLING SYSTEM No. 7 DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 General Data link layer Network layer User-network management Stage 3 description for supplementary services using DSS 1 Q.600-Q.699 Q.700-Q.849 Q.850-Q.999	SPECIFICATIONS OF SIGNALLING SYSTEM R2	Q.400-Q.499
SPECIFICATIONS OF SIGNALLING SYSTEM No. 7 DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 Q.850-Q.999 General Data link layer Q.920-Q.929 Network layer User-network management Stage 3 description for supplementary services using DSS 1 Q.700-Q.849 Q.850-Q.999	DIGITAL EXCHANGES	Q.500-Q.599
DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 General Data link layer Network layer User-network management Stage 3 description for supplementary services using DSS 1 Q.850-Q.999 Q.920-Q.919 Q.920-Q.929 Q.930-Q.939 Q.940-Q.949 Q.950-Q.999	INTERWORKING OF SIGNALLING SYSTEMS	Q.600-Q.699
General Q.850–Q.919 Data link layer Q.920–Q.929 Network layer Q.930–Q.939 User-network management Q.940–Q.949 Stage 3 description for supplementary services using DSS 1 Q.950–Q.999	SPECIFICATIONS OF SIGNALLING SYSTEM No. 7	Q.700-Q.849
Data link layer Network layer User-network management Stage 3 description for supplementary services using DSS 1 Q.920–Q.929 Q.930–Q.939 Q.940–Q.949 Q.950–Q.999	DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1	Q.850-Q.999
Network layerQ.930-Q.939User-network managementQ.940-Q.949Stage 3 description for supplementary services using DSS 1Q.950-Q.999	General	Q.850-Q.919
User-network management Q.940–Q.949 Stage 3 description for supplementary services using DSS 1 Q.950–Q.999	Data link layer	Q.920-Q.929
Stage 3 description for supplementary services using DSS 1 Q.950–Q.999	Network layer	Q.930-Q.939
	User-network management	Q.940-Q.949
PUBLIC LAND MOBILE NETWORK Q.1000-Q.1099	Stage 3 description for supplementary services using DSS 1	Q.950-Q.999
	PUBLIC LAND MOBILE NETWORK	Q.1000-Q.1099
INTERWORKING WITH SATELLITE MOBILE SYSTEMS Q.1100-Q.1199	INTERWORKING WITH SATELLITE MOBILE SYSTEMS	Q.1100-Q.1199
INTELLIGENT NETWORK Q.1200–Q.1999	INTELLIGENT NETWORK	Q.1200-Q.1999
BROADBAND ISDN Q.2000–Q.2999	BROADBAND ISDN	Q.2000-Q.2999

 $For {\it further details, please refer to ITU-TList of Recommendations}.$



ISDN USER-NETWORK INTERFACE LAYER 3 SPECIFICATION FOR BASIC CALL CONTROL

Summary

This Recommendation specifies the procedures for the establishing, maintaining and clearing of network connections at the ISDN user-network interface. These procedures are defined in terms of messages exchanged over the D-channel of basic and primary rate interface structures. The functions and procedures of this protocol, and the relationship with other layers, are described in general terms in Recommendation Q.930/I.450 [1]. Annex M contains the additional basic call signalling requirement for the support of private network interconnection for VPN applications.

Source

ITU-T Recommendation Q.931 was revised by ITU-T Study Group 11 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 15^{th} of May 1998.



FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation the term *recognized operating agency (ROA)* includes any individual, company, corporation or governmental organization that operates a public correspondence service. The terms *Administration, ROA* and *public correspondence* are defined in the *Constitution of the ITU (Geneva, 1992)*.

INTELLECTUAL PROPERTY RIGHTS

The ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. The ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, the ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

© ITU 1999

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the ITU.



CONTENTS

1	General
1.1	Scope of this Recommendation
1.2	Application to interface structures
2	Overview of call control
2.1	Circuit-switched calls
	2.1.1 Call states at the user side of the interface
	2.1.2 Network call states
2.2	Packet-mode access connections
	2.2.1 Access connection states at the user side of the interface
	2.2.2 Access connection states at the network side of the interface
2.3	Temporary signalling connections
	2.3.1 Call states at the user side of the interface
	2.3.2 Network call states
2.4	States associated with the global call reference
	2.4.1 Call states at the user side of the interface
	2.4.2 Call states at the network side of the interface
3	Message functional definitions and content
3.1	Messages for circuit-mode connection control
	3.1.1 ALERTING
	3.1.2 CALL PROCEEDING
	3.1.3 CONNECT
	3.1.4 CONNECT ACKNOWLEDGE
	3.1.5 DISCONNECT
	3.1.6 INFORMATION
	3.1.7 NOTIFY
	3.1.8 PROGRESS
	3.1.9 RELEASE
	3.1.10 RELEASE COMPLETE
	3.1.11 RESUME
	3.1.12 RESUME ACKNOWLEDGE
	3.1.13 RESUME REJECT
	3.1.14 SETUP
	3.1.15 SETUP ACKNOWLEDGE
	3.1.16 STATUS
	3.1.17 STATUS ENQUIRY
	3.1.18 SUSPEND



DOCKET

Explore Litigation Insights



Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time** alerts and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.

